

From glowbugs@devp214.theporch.com Thu Feb 6 12:39:14 1997  
Return-Path: <glowbugs@devp214.theporch.com>  
Received: from devp214.theporch.com (devp214.theporch.com [192.150.244.22])  
by uro.theporch.com (8.8.5/AUX-3.1.1)  
with ESMTP id MAA02256 for <shimshon@theporch.com>;  
Thu, 6 Feb 1997 12:39:12 -0600 (CST)  
From: glowbugs@devp214.theporch.com  
Received: from devp214.theporch.com (localhost [127.0.0.1])  
by devp214.theporch.com (8.8.4/SCO-5.0.2) with SMTP  
id SAA11351; Thu, 6 Feb 1997 18:36:14 GMT  
Date: Thu, 6 Feb 1997 18:36:14 GMT  
Message-Id: <199702061836.SAA11351@devp214.theporch.com>  
Errors-To: ws4s@infoave.net  
Reply-To: glowbugs@devp214.theporch.com  
Originator: glowbugs@devp214.theporch.com  
Sender: glowbugs@devp214.theporch.com  
Precedence: bulk  
To: Multiple recipients of list <glowbugs@devp214.theporch.com>  
Subject: GLOWBUGS digest 438  
X-Listprocessor-Version: 6.0 -- ListProcessor by Anastasios Kotsikonas  
X-Comment: Please send list server requests to listproc@theporch.com  
Status: 0

#### GLOWBUGS Digest 438

Topics covered in this issue include:

- 1) Ancient knowledge; class C grid impedance  
by sinned@VNET.IBM.COM
- 2) Re: 70V PA output transformers  
by mjsilva@ix.netcom.com (michael silva)
- 3) Re: Ancient knowledge; class C grid impedance  
by rdkeys@csemail.cropsci.ncsu.edu
- 4) 70v Transformers - another question  
by Dave <gekko95@ix.netcom.com>
- 5) Re: Radio Swap Meet  
by bry@mnsinc.com (Brian Carling G3XLQ/AF4K)
- 6) Re: 70v Transformers - another question  
by jeffd@coriolis.com (Jeff Duntemann)
- 7) Re: 624 Kits / a source of rocks  
by bry@mnsinc.com.NO\_SPAM (Brian Carling G3XLQ/AF4K)
- 8) Even more thoughts re: 1843.2 kc  
by Jeffrey Herman <jeffreyh@hawaii.edu>
- 9) Re: Top Band Frequency  
by "Brian Carling" <bry@mail1.mnsinc.com>
- 10) Tube base removal  
by jkh@lexis-nexis.com (John Heck)
- 11) Re[2]: Top Band Frequency

- by mack@mails.imed.com
- 12) Re: Tube base removal  
by jeffd@coriolis.com (Jeff Duntemann)
- 13) Re: 70V PA output transformers  
by Roy Morgan <morgan@speckle.ncsl.nist.gov>
- 14) Re: Re[2]: Top Band Frequency  
by jeffd@coriolis.com (Jeff Duntemann)
- 15) Re: Tube base removal  
by Roy Morgan <morgan@speckle.ncsl.nist.gov>
- 16) R-392 assistance!  
by "KASTIGAR, MATTHEW (M)" <MK2331@STLMAIL7.SBC.COM>
- 17) Re[4]: Top Band Frequency  
by mack@mails.imed.com
- 18) Re: Tube base removal  
by launerb@crl.com (William H. Launer)
- 19) Audio impedance matching  
by bill@skeeter.frco.com (William Hawkins)
- 20) Re: Tube base removal  
by wrm@ccii.co.za (Wouter de Waal)

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Date: Wed, 5 Feb 97 13:02:21 CST  
From: sinned@VNET.IBM.COM  
To: glowbugs@theporch.com  
Subject: Ancient knowledge; class C grid impedance  
Message-ID: <199702051904.NAA19864@uro.theporch.com>

Situation: trying to drive a P-P, class C amp, link coupled input, with an exciter designed for 50-70 ohm load.

Problem: apparent impedance mismatch causing "rough" sounding tone on a monitoring receiver. Plenty of driving watts available.

Experiment: I coupled the amp to the exciter through a small antenna tuner and was able to get good sounding tone. Grid current indicates same DC values whether tone is rough or smooth, and output of amp is same also, regardless of tone. BTW, I can't tell which direction the antenna tuner is transforming the impedance.

I referred to the Wm. Orr texts on class C amplifier design and his calculations all require detail data from tube curve charts to resolve input impedance. Of course, those charts are unavailable to me. I can adjust the turns ratio of the input link for impedance matching if I knew which way to go.

Does anyone remember any generalities in this area about the range of input impedance one would expect to encounter? Is it very low, eg. 10-20

ohms, or perhaps very high, in the thousands of ohms range?

Thanks,  
Dennis W5FRS  
sinned@vnet.ibm.com

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Date: Wed, 5 Feb 1997 13:21:59 -0600 (CST)  
From: mjsilva@ix.netcom.com (michael silva)  
To: glowbugs@theporch.com  
Subject: Re: 70V PA output transformers  
Message-ID: <199702051921.NAA29329@dfw-ix9.ix.netcom.com>

Jeff wrote:

>  
>Hi gang--  
>  
>I was digging around in my transformer bin last night, and retrieved  
one of  
>my several "70V line transformers" which are in fact PA audio output  
>transformers. I've often wondered what it is about the transformer  
that  
>makes it a 70V transformer. Do they use a 70V audio signal to define  
the  
>impedance? Are the primaries of all 70V transformers the same  
impedance,  
>then?

Yes and yes, AFAIK. For example, the 1 Watt tap on a 70.7 transformer  
has a primary impedance of  $(70.7 \times 70.7)/1$  or 5000 ohms (with the  
secondary connected to it's design impedance). Some catalogs actually  
list both primary impedances and wattages, and the relationship as  
described above.

73,  
Mike, KK6GM

-----  
Date: Wed, 5 Feb 1997 17:14:59 -0500 (EST)  
From: rdkeys@csemail.cropsci.ncsu.edu  
To: sinned@VNET.IBM.COM  
Cc: glowbugs@theporch.com  
Subject: Re: Ancient knowledge; class C grid impedance  
Message-ID: <9702052215.AA144206@csemail.cropsci.ncsu.edu>

>  
> Situation: trying to drive a P-P, class C amp, link coupled input, with an  
> exciter designed for 50-70 ohm load.

Should work fine.

I am assuming the input is a tuned tank in the amplifier with a link and coax to the driver. If it is anything else, it won't work. You can install a pinet as the input circuit and that works fine. It is just the reverse of the traditional transmitter output pinet.

> Problem: apparent impedance mismatch causing "rough" sounding tone on a  
> monitoring receiver. Plenty of driving watts available.

Too much or too little driving power can cause that. If you are using a sandystate driver, and the link does not match the driver that will overload them and sometimes generate problems like the rough sounding notes. My TS-140S is notorious for that sort of thing. I have noticed that underdriving an amplifier due to insufficient grid voltage will cause it to have a rough sounding note. I am not exactly sure why, theoretically.

> Experiment: I coupled the amp to the exciter through a small antenna tuner  
> and was able to get good sounding tone. Grid current indicates same DC  
> values whether tone is rough or smooth, and output of amp is same also,  
> regardless of tone. BTW, I can't tell which direction the antenna tuner  
> is transforming the impedance.

The tuner is transforming impedances or tuning the link and/or transforming impedances both. This can increase the net grid drive, which would indicate insufficient grid drive was your problem.

Tight link coupling does not need tuning, but loose link coupling does need tuning to give the best match. Normally the link is a series tuned affair where you have a high C value and a low L value resonant at the desired frequency. A 3 turn link needs about 600-1000 pf or so to resonate at 160/80M. The alternative is to use a full series tuned tuner (a series coil and capacitor resonant at the desired frequency) and then a small 1/2/3 turn link to couple into the amplifier. The coil and capacitor resonate the system and the link then couples into the following amplifier.

>From your design, that you gave at the start, it is not apparent exactly what the input circuit actually is. I am making the assumption that it is a tuned tank with a link coupling. I would use the series LC antenna tuner and a 2 or 3 turn link to couple into the amplifier from the driver. That should handle most requirements. The better alternative is a pinet input tuner to the amplifier, as you experimented with for the optimum

and most flexible coupling.

> I referred to the Wm. Orr texts on class C amplifier design and his calculations all require detail data from tube curve charts to resolve input impedance. Of course, those charts are unavailable to me. I can adjust the turns ratio of the input link for impedance matching if I knew which way to go.

Tuning the link coupling system will get around those high-level charts and calculations.

My rule of thumb is never use a link of greater than three turns. That usually will match pretty well on my gear for pinet output. That is what I use on my breadboard antenna tuner as its input from HW-16 or the AN/SRT-14 pinet. The link is close-coupled into the grounded antenna tuner coil. Works fine for me.

If you use a test setup of 1, 2, or 3 turns, you should easily begin to see any impedance effect.

> Does anyone remember any generalities in this area about the range of input impedance one would expect to encounter? Is it very low, eg. 10-20 ohms, or perhaps very high, in the thousands of ohms range?

The input tank of the amplifier, assuming it has an input tank is high impedance (several thousands of ohms generically, unless you use swamping resistors to tame it). The link is typically low impedance of the range of 10-50 ohms.

My gut feeling is that you are underdriving the thing with the link only. You will most likely need to resonate the link with a series capacitor or a series coil and capacitor (or the pinet tuner you used) for best results.

Good Luck!  
73/ZUT DE NA4G/Bob

-----  
Date: Wed, 5 Feb 1997 15:00:00 -0600 (CST)  
From: Dave <gekko95@ix.netcom.com>  
To: glowbugs@theporch.com  
Subject: 70v Transformers - another question  
Message-ID: <199702052100.PAA18010@dfw-ix11.ix.netcom.com>

At 05:19 PM 2/5/97 GMT, you wrote:  
>Hi gang--

>  
>I was digging around in my transformer bin last night, and retrieved one of  
>my several "70V line transformers" which are in fact PA audio output  
>transformers. I've often wondered what it is about the transformer that  
>makes it a 70V transformer. Do they use a 70V audio signal to define the  
>impedence? Are the primaries of all 70V transformers the same impedance,  
>then?  
>

Thanks for a good question, Jeff. I'd like to add another  
bit:

Is there a glowbug application for them? I also have some 25v transformers  
around as well.

73's

Dave WB7AWK  
\* \* \* \* \*

"Sure it's 1939 technology. But it's GOOD 1939 technology"

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Date: Wed, 05 Feb 1997 20:02:37 GMT  
From: bry@mnsinc.com (Brian Carling G3XLQ/AF4K)  
To: glowbugs@theporch.com  
Subject: Re: Radio Swap Meet  
Message-ID: <199702052302.SAA23754@news2.mnsinc.com>

I hope this is appropriate & useful to someone on here!  
On Wed, 05 Feb 1997 10:27:16 -0800, this appeared in r.r.s:

|>On May 10th NORTHWEST VINTAGE RADIO SOCIETY & PORTLAND AMATEUR RADIO CLUB  
|>will host a vintage/amateur radio swap meet at the hillsboro armory  
|>{Washington co fairgrounds}Admission will be \$2 and swap tables are \$10  
|>{includes table & two passes}Overnight RV parking will be \$10w/hookup &  
|>\$5w/o.You may unload your gear on Friday night & Saturday at 7:am. Doors  
|>will open at 9:am till around 3:pm.There will also be VE testing at 9:am  
|>& 12:noon, you must pre register for the {9:am} session no later than May  
|>3rd.We will also have some refreshments too!! We also have door prizes to  
|>give away.Tables,rv parking must be prepaid by April 25th & confirmation  
|>will be sent to you. For ve testing you must register with Greg  
|>Nightingale KK7GN 360-576-1989 or E-mail gregn@teleport.com For more info  
|>please contact: Kirk Smith KB7EGK 503-786-5142 E-mail

|>kirk.c.smith@tek.com and Myron White 503-629-5513 HOPE TO SEE YA THERE!!

73 from Bry (((Amateur Radio G3XLQ / AF4K)))  
<http://www.mnsinc.com/bry/>  
E-mail: bry@mnsinc.com  
Home of MEGALIST ham radio files, SWL info. etc. etc.

-----  
Date: Wed, 5 Feb 1997 16:55:34 -0700  
From: jeffd@coriolis.com (Jeff Duntemann)  
To: gekko95@ix.netcom.com  
Cc: glowbugs@theporch.com  
Subject: Re: 70v Transformers - another question  
Message-ID: <3.0.32.19970205164832.00b365a0@165.247.88.2>

Regarding 70V line transformers, Dave asked:

>Is there a glowbug application for them? I also have some 25v transformers  
>around as well.

That's almost certain, though it would be helpful to fully understand what those transformers actually are. I was looking for a transformer to match a 2200 ohm source to a 10 ohm load and wondering if I could jigger one of those 70V jobs to come close. Then I realized I wasn't entirely confident what the input impedance to one of those transformers is, though the consensus here seems to be that the 10W tap gives you 500 ohms.

I have enough information to do the math, I think, and if it works I'll certainly let people here know.

(The application I'm sketching out on paper is a 12V IF-detector strip using space charge tubes and a period T0-36 transistor power audio final. I have the tubes and I have the transistor and I could wire it in an evening. I'm not sure what I'd get but because it's a non-lethal tube circuit it could be useful for sharing with young hands. Not sure when I'll have time to build it but failing that transformer I have all the parts.)

--73--

--Jeff Duntemann KG7JF  
Scottsdale, Arizona

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Date: Wed, 05 Feb 1997 20:59:56 GMT  
From: bry@mnsinc.com.NO\_SPAM (Brian Carling G3XLQ/AF4K)  
To: glowbugs@theporch.com  
Subject: Re: 624 Kits / a source of rocks  
Message-ID: <199702052359.SAA26927@news2.mnsinc.com>

Pat Bunn N4LTA has been selling QRP transmitter kits for years and looks like he is going slowly out of business. What he may have that will interest GB aficionados is a supply of crystals for the ham CW bands!

May I suggest that you e-mail him if you need some. Maybe he will make us a group deal on them????

From: pbunn624@teleplex.net (Pat Bunn)  
Date: 4 Feb 1997 18:50:35 GMT

As most of you have heard , 624 Kits is no longer in business except for offering the 100 watt output 6 meter amplifier and a 6 meter receive converter.

I have a very large amount of leftover parts, PC Boards, crystals toroids ect that I wish to rid myself of. If you are interested as a club or individual please Email me for a list.

Pat Bunn, N4LTA

73 from Bry (((Amateur Radio G3XLQ / AF4K)))  
<http://www.mnsinc.com/bry/>  
E-mail: bry@mnsinc.com \*\*\* REMOVE ".NO\_SPAM" to reply \*\*\*  
Home of MEGALIST ham radio files, SWL info. etc. etc.

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Date: Wed, 5 Feb 1997 15:12:01 -1000  
From: Jeffrey Herman <jeffreyh@hawaii.edu>  
To: Glowbugs List <glowbugs@theporch.com>  
Subject: Even more thoughts re: 1843.2 kc  
Message-ID: <Pine.GS0.3.93.970205150818.24125A-100000@uhunix3>

Here are a few more comments from the guys on 160m mail list regarding the use of 1843.2 kc for AM QRP. This will be the last batch that I'll forward (I think you all get the idea!).

73,  
Jeff KH2PZ  
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Hi Jeff,

Here are my thoughts:

If the guys are using truly 5 watt or less AM radios and are using a marginal antenna, they will be less problem than the fish nets.

Otherwise, they could be a problem when the band is open and European SSB is coming through. The national QRP calling frequency is 1910 in the middle of the JA window!! I would guess 1895 would be a lot safer, and they would not get blown away by KWs and testers.

73                    George                    K8GG

Dear Jeff,

1843 is prime DX territory, according to both actual use and band plan.

Although QRP might not bother too many people over a broad area, AM uses a lot of bandwidth and anyone local would almost certainly object. It doesn't take much of a signal to wipe out a DX station from across the globe.

Judging from what I see on the band, with a lot of SSB ragchew between 1850 and 1900, and the JA window from 1907.5 to 1912.5, the best spot for AM of any kind would be 1925 or up. I imagine with QRP, one doesn't want to fight much QRM, so staying in the less populated part of the band would have an advantage.

I think the price of a crystal would be cheaper than the hassle of trying to run on 1843, unless the objective is to scrounge absolutely everything needed to make these rigs. In that case, I think there are probably some articles in QST or other mags on grinding crystals to other frequencies.

A VFO is pretty easy to make to run on 160, and is not really much more complicated than a crystal oscillator, since no mixing would be necessary.

What is the address of the GlowBugs? I run tubes myself and am interested in building stuff around some old tubes my Grandfather has.

73 and good luck, Rob K2WI

I assume you have a whole bunch of mail by now with people telling you this part of the band is highly used for international SSB QSOs! So, here is another one.

Just two nights ago, I worked D44BC on 1843 kHz. Most DX I hear on SSB is between 1840 and 1847, which would pretty much be filled with an AM signal.

Doesn't sound like it would work out too well.

73 Tree N6TR

Hi Jeff...well as both a Firebottle Nut and a 160 Mtr DX nut!! I will have to say that if you fire up on 1843.2 kc with a AM radio or even a SSB radio and you are not looking for or working DX you will be chastized severely.....need to get up above 1925 kc to do AM!!

de John K9UWA / P40WA

Top Band Forever

160 DXCC 250 / 245  
160 WAZ 40 / 40

Jeff, I can't see a problem. The freq. is above the DX window and below most of the phone operation.

Good DX

73, Brad

Jeff, 1843 is in the 160 meter ssb portion on the band.  
1800 to 1830 is cw, 1830 to 1840 is dx window, 1840 up ssb and ssb dx.  
you can operate cw on 1843, but probably be real rough with kw ssb  
stations there. Or you can operate AM there, same problem.  
Just my .02 cents worth thanks 73 Merv K9FD

-----  
Date: Thu, 6 Feb 1997 04:52:14 +0000  
From: "Brian Carling" <bry@mail1.mnsinc.com>  
To: glowbugs@devp214.theporch.com  
Subject: Re: Top Band Frequency  
Message-ID: <199702061251.HAA07699@news2.mnsinc.com>

On 5 Feb 97 Re: 1832 kc.

BA BOB says:

> The problem is that that is smack in the middle of a lot of fone  
> activity. They get pretty testy when cw folks creep up that far.  
> If a tiny AM did likewyse, dunno. They might freak out or be happy.

> 73/ZUT DE NA4G/Bob UP

I think it would NOT be a problem for AM at that FREQ. You see,  
AM and SSB co-exist just fine on 75m around 3880 kc.

Of course, there is some QRM but you expect that with phone, and at least the SSB boys can hear the AM exalted carrier mode.

Now, if we are running QRP AM also, I think the biggest problem may be hearing each other!

Anyone game for a 100-200 watt plate modulated project on 1832?

I think if someone would help me find modulation transformers I would

go for it in a heartbeat!

SO far, I have not had much luck finding any.

```
*****
*** 73 from Radio AF4K / G3XLQ in Gaithersburg, MD USA *
** E-mail to: bry@mnsinc.com *
*** See the great ham radio resources at: *
** http://www.mnsinc.com/bry/ *
*****
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-----  
Date: Thu, 6 Feb 97 09:13:27 EST  
From: jkh@lexis-nexis.com (John Heck)  
To: glowbugs@theporch.com  
Subject: Tube base removal  
Message-ID: <9702061413.AA15165@beans.lexis-nexis.com>

Folks,  
How does one go about cleanly removing the bases from tubes? I have a buncha duds whose bases I would like to use for coil forms. I have read that you can boil the tubes to loosen the base from the bulb, but how do you unsolder the pins all at once to remove the bulb without damaging the base? Thank you.

Regards,  
John Heck, KC8ETS  
1009 Donson Drive  
Dayton, Ohio 45429  
(513)865-7036(work)  
jkh@lexis-nexis.com

-----  
Date: Thu, 06 Feb 97 08:38:48 cst  
From: mack@mails.imed.com  
To: glowbugs@devp214.theporch.com, bry@mail1.mnsinc.com  
Subject: Re[2]: Top Band Frequency  
Message-ID: <9701068552.AA855246912@mails.imed.com>

Hey Y'all:

We also coexist on 7290. There is a group up in the Ohio area that is on about 1300 EST while my buddy WB5NMH and I are on 7290 USB. We don't seem to bother them and they don't bother us. It's great that we can share the frequency at the same time. Indeed there is activity on 7290 LSB at the same time we are on USB! How's that for cooperation?

Actually, I had a 100 to 200 Watt plate modulated rig in mind when I made my original query. I haven't tried to find a modulation transformer yet, but I figure that I could at least get something going using a FET for series modulation until I can find a suitable transformer. I figure 1000V for a plate supply for the peaks and 500V for unmodulated carrier feeding a couple of 6146B's. When I get the modulation transformer I can boost the plate voltage up to 750 V.

From Jeff's post, we might want to find another frequency for AM activity, since it is in the DX window. Looks like the VFO is the way to go. It's a shame. My oscillators usually don't and my amplifiers usually do :<)

Ray Mack  
WD5IFS  
mack@mails.imed.com  
Friendswood (Houston), TX

----- Reply Separator -----

Subject: Re: Top Band Frequency

<snip>

I think it would NOT be a problem for AM at that FREQ. You see, AM and SSB co-exist just fine on 75m around 3880 kc.

<snip>

Anyone game for a 100-200 watt plate modulated project on 1832?

I think if someone would help me find modulation transformers I would go for it in a heartbeat!

SO far, I have not had much luck finding any.

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\*\*\* 73 from Radio AF4K / G3XLQ in Gaithersburg, MD USA \*  
\*\* E-mail to: bry@mnsinc.com \*  
\*\*\* See the great ham radio resources at: \*  
\*\* <http://www.mnsinc.com/bry/> \*  
\*\*\*\*\*

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Date: Thu, 6 Feb 1997 08:12:09 -0700  
From: jeffd@coriolis.com (Jeff Duntemann)  
To: jkh@lexis-nexis.com  
Cc: glowbugs@theporch.com  
Subject: Re: Tube base removal  
Message-ID: <3.0.32.19970206080500.009e14f0@165.247.88.2>

At 02:13 PM 2/6/97 GMT, KC8ETS wrote:

>Folks,

>How does one go about cleanly removing the bases from tubes? I have a buncha  
>duds whose bases I would like to use for coil forms. I have read that you can  
>boil the tubes to loosen the base from the bulb, but how do you unsolder the  
>pins all at once to remove the bulb without damaging the base? Thank you.

First of all, choose your battles. Wiggle the bases on all your duds to see if any are the least bit loose. If the envelope has let go of the base, it's a snap, especially on those wonderful old G bottles:

Grip the glass envelope between the ball of your left hand (vise versa if you're a southpaw) and your little finger, with the base up. Take your soldering iron and heat as many of the pins simultaneously as the geometry of the tip will allow. With the fingers of your left hand, rock the base \*away\* from the envelope on the side your heating, so that the wires will be pulled back out of the base a little. When you can't go any further that way, rotate the tube 90 degrees and heat the next two or three pins, rocking the base so that when the pin solder loosens the wire will be pulled down out of the base. Couple times around and it comes out clean.

This sounds couplex, but it's really pretty simple and I've done it numerous times.

I've never tried to loosen the adhesive holding the tube envelope to the base, but boiling would be something to try. Too much water exposure can damage some phenolics, tho--tubes were not meant to get wet, and I'd be careful here. On the other hand, they're duds, right?

I'm not sure if they still offer them, but AES used to sell \*unused\* octal tube bases for a buck apiece; I bought a dozen.

Something you guys should probably not bother trying: Grinding the top off a dead 12AX7 on a diamond wheel, surgically removing its innards, and then winding small coils on it, soldering the leads to the pins on the bottom without trying to go inside the envelope. Did this once. Won't do it again.

--73--

--Jeff Duntemann KG7JF  
Scottsdale, Arizona

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Date: Thu, 06 Feb 1997 09:48:11 -0500

From: Roy Morgan <morgan@speckle.ncsl.nist.gov>  
To: glowbugs@theporch.com  
Subject: Re: 70V PA output transformers  
Message-ID: <3.0.32.19970206094810.006c5858@speckle.ncsl.nist.gov>

At 07:22 PM 2/5/97 GMT, you wrote:

>Jeff wrote:

>>

>>Hi gang--

>>

>>I was digging around ... several "70V line transformers"

... Do they use a 70V audio signal to define the  
>>impedence? Are the primaries of all 70V transformers the same  
>impedence, then?

A little more on this:

- Public address system and theater system engineers adopted 70 volts as a compromise between avoiding electrical wiring code requirements and efficiency of audio power distribution (according to a Western Electric brochure I have).

- The distribution line will have 70 volts rms on it when the amplifier is delivering its full rated power (whatever that happens to be).

- The loads attached to the line should add up to the full rated power of the amplifier. (If they don't, the amp will see a load impedance NOT what it was designed for, with attendant distortion and other problems).

- The chosen tap on each line transformer will deliver to its load the power indicated on that tap with 70 volts on the line. That is, the input impedance of that tap is such that at 70vrms, it will dissipate the indicated power.

- In distribution systems, highest fi is usually not important, but best results will occur when transformers are operated at or very near their design impedances. A few minutes with your slide rule will get you the input impedances (sorry, I can't find the table I've saved).

These transformers are just the thing for getting speaker power out of such receivers as the R-390 and the venerable RAL and RAK. No glowbuggers shack should be without one.

If you drive 'em with toobes, they sound better.

Keep em glowing!

-- Roy Morgan/Building 820, Room 562/Gaithersburg MD 20899  
(National Institute of Standards and Technology)  
301-975-3254 Fax: 301-948-6213 morgan@speckle.ncsl.nist.gov --

-----  
Date: Thu, 6 Feb 1997 08:14:06 -0700  
From: jeffd@coriolis.com (Jeff Duntemann)  
To: mack@mails.imed.com  
Cc: glowbugs@theporch.com  
Subject: Re: Re[2]: Top Band Frequency  
Message-ID: <3.0.32.19970206080656.00bb0d80@165.247.88.2>

Ray--

I'd be interested in knowing how to use a FET to series modulate a tube.  
Any articles or book citations you could give us? Or is this "native wisdom?"

--73--

--Jeff Duntemann KG7JF  
Scottsdale, Arizona

>Actually, I had a 100 to 200 Watt plate modulated rig in mind  
>when I made my original query. I haven't tried to find a modulation  
>transformer yet, but I figure that I could at least get something  
>going using a FET for series modulation until I can find a suitable  
>transformer. I figure 1000V for a plate supply for the peaks and 500V  
>for unmodulated carrier feeding a couple of 6146B's. When I get the  
>modulation transformer I can boost the plate voltage up to 750 V.

-----  
Date: Thu, 06 Feb 1997 10:34:48 -0500  
From: Roy Morgan <morgan@speckle.ncsl.nist.gov>  
To: glowbugs@theporch.com  
Subject: Re: Tube base removal  
Message-ID: <3.0.32.19970206103448.006997b8@speckle.ncsl.nist.gov>

At 02:13 PM 2/6/97 GMT, you wrote:

>Folks,  
>How does one go about cleanly removing the bases from tubes? I have a buncha  
>duds whose bases I would like to use for coil forms. I have read that you can  
>boil the tubes to loosen the base from the bulb,

UNlikely!

May I quote from "An Excerpt from TUBE LORE, A reference for Users and Collectors" by Ludwell Sibley, Sound Practices Number 12:

"Solvents (acetone, etc.) are ineffective in softening the old base cement - the cement was baked hard in manufacture, and "nothing" dissolves it."

My method is to wrap the tube in a rag, smash with hammer, then de-gut the base with pliers and utility knife. Unsolder pin leads one at a time after the glass is broken out.

... but how do you unsolder the  
>pins all at once to remove the bulb without damaging the base?

If the base is loose already, twisting may break the leads. If it doesn't fasten the base in a vice or other clamp, wave the bernzomatic torch over it, and wiggle the tube. The leads are usually soldered only at the very tip, and need only a little heat to loosen.

-- Roy Morgan/Building 820, Room 562/Gaithersburg MD 20899  
(National Institute of Standards and Technology)  
301-975-3254 Fax: 301-948-6213 morgan@speckle.ncsl.nist.gov --

-----  
Date: 06 Feb 1997 10:04:10 CST  
From: "KASTIGAR, MATTHEW (M)" <MK2331@STLMAIL7.SBC.COM>  
To: INTERNET@SWGATE1.SBC.COM  
Subject: R-392 assistance!  
Message-ID: <STLMAIL7.MK2331.401004100097037FSTLMAIL7@SBC.COM>

Microsoft Mail v3.0 IPM.Microsoft Mail.Note  
From: KASTIGAR, MATTHEW (MM)  
To: 'internet@swgate1'  
Subject: R-392 assistance!  
Date: 1997-02-06 10:07  
Priority:  
Message ID: 9392B2E2  
Conversation ID: 9392B2E2  
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internet: glowbugs@theporch.com

Help!

I have an R-392 (vehicular version of the R-390, I understand) and it has been partially disassembled (!)... It appears to have all of the parts, but I would like a copy of the manual for reference. Luckily, the tuning parts (cams, gears) is intact, only the 'outer' parts and screws removed.

\*ANY\* help appreciated!

THX,

Matt N0XEU

MK2331@STLMAIL7.SBC.COM

-----  
Date: Thu, 06 Feb 97 10:36:09 cst

From: mack@mails.imed.com

To: glowbugs@devp214.theporch.com

Subject: Re[4]: Top Band Frequency

Message-ID: <9701068552.AA855254095@mails.imed.com>

Hey Y'all:

I guess this falls under "native wisdom" since I am a hardware design engineer by training. The way I plan to do it is just like the linear regulator stuff you see in the Handbook for doing 12 VDC supplies. Instead of a DC reference, I will put my audio signal into the refence input. There are a lot of cheap FET's around that will handle 1000 VDC these days. Probably, to be safe, I'll set the plate supply to 800VDC max and use a couple of IRFPG30 FET's from DigiKey. They are \$12 each and are rated at 1000VDC, 3 A max, @ 125W. The IRFG20 is a similar transistor, but it is in the T0220 package vs T0247AA. It is only \$6.48, but it is only good for 54W.

This approach is \*definatly\* brute force. I'll need a mondo heat sink and lots of air to dissipate the 100W or so of continuous dissipation with no modulation. This is where a class AB modulator really shines. The only time you dissipate full power in the system is on voice peaks. Normally you only have the waste power in the finals themselves. With the series system, the total power from the power transformer remains the same.

Ray Mack

WD5IFS

mack@mails.imed.com

Friendswood (Houston), TX

----- Reply Separator -----

Subject: Re: Re[2]: Top Band Frequency

Author: jeffd@coriolis.com at mails

Date: 2/6/97 9:17 AM

Ray--

I'd be interested in knowing how to use a FET to series modulate a tube.  
Any articles or book citations you could give us? Or is this "native wisdom?"

-----  
Date: Thu, 6 Feb 1997 11:01:57 -0600  
From: launerb@crl.com (William H. Launer)  
To: glowbugs@devp214.theporch.com  
Subject: Re: Tube base removal  
Message-ID: <v01530500af1fb5a83d41@[192.0.2.1]>

If it's a "dud" tube, and I just want the base, I use the old "hammer  
and paper bag" routine. The bag retains the broken glass, and other  
"nasties" from the broken tube. Then unsolder the wires one at a time.

73, Bill wb0cld

Bill Launer  
St. Charles, MO  
launerb@crl.com  
wb0cld@wb0cld.ampr.org [44.46.66.25]  
qrp-l #279            qrp arco #3551  
Grid Square EM48RT

-----  
Date: Thu, 6 Feb 1997 11:18:54 -0600  
From: bill@skeeter.frco.com (William Hawkins)  
To: glowbugs@devp214.theporch.com  
Subject: Audio impedance matching  
Message-ID: <9702061718.AA01070@skeeter.bvc.frco.com>

Audio impedance matching is really concerned with preventing overload.

When a speaker is rated at 4 ohms impedance, that's the worst case value,  
that occurs at resonance and is about the DC resistance of the voice coil  
(unless you've got crossover networks and other speakers). The impedance  
increases dramatically as you move away from resonance, and is affected

my more things than most folks would care to measure. It's unpredictable.

The amplifier has negative feedback. It faithfully (more or less) reproduces the input voltage waveform at the output from zero load (infinite impedance) up to the point where the power tubes can't control enough power to keep the voltage up. Then you get clipping and distortion and all those things the golden ear crowd loves.

So a public address distribution amplifier is designed for maximum power transfer at 70 volts output. You tack on transformers that tell you how much power you will draw at 70 volts with a selected secondary impedance. You add them all up and stop at the amplifier power rating (or say what the heck, nobody listens at resonance anyway, and double it).

Not at all like RF impedance matching, eh?

Regards,  
Bill Hawkins bill@skeeter.frco.com

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Date: Thu, 6 Feb 1997 17:09:03 +0200  
From: wrm@ccii.co.za (Wouter de Waal)  
To: glowbugs@theporch.com  
Subject: Re: Tube base removal  
Message-ID: <199702061509.RAA14609@gateway.ccii.co.za>

>Folks,  
>How does one go about cleanly removing the bases from tubes? I have a buncha  
>duds whose bases I would like to use for coil forms. I have read that you can  
>boil the tubes to loosen the base from the bulb, but how do you unsolder the  
>pins all at once to remove the bulb without damaging the base? Thank you.

Use a hammer. Really. You didn't want to keep the glass in one piece did you?

W

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End of GLOWBUGS Digest 438  
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